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Method of Determining Combustion Gas Flow

The problem:

To determine hot gas flow patterns on liquid rocket injector face and baffle surfaces to indicate modifications that will increase performance and improve combustion stability. A technique is desired whereby the gas flow pattern can be clearly defined and made suitable for analysis by indicating magnitude and direction of radial winds across the combustion zone.

The solution:

Apply a coating of zirconium oxide on surfaces of injector face and baffles to be studied. A zirconium oxide coating will withstand combustion temperatures and, due to the coarse surface and coloring of the coating, show the hot gas patterns. The study of combustion phenomena and hot gas distribution can then be analyzed. This assists in the injector modifications to increase performance and combustion stability.

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B67-10455

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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